CLAIMS

1) Digital transmission method of the type with error correcting coding, comprising, before a step of transmission over a channel, a coding procedure for generating, from a useful information item, a coded information item comprising at least one redundant information item and, after the said step of transmission over the said channel, a decoding procedure in order to obtain, from a received information item to be decoded, an estimation of said useful information item with correction of the transmission errors based on said at least one redundant information item, said coding procedure comprising a plurality of elementary coding steps associated with at least one interleaving step and operating in parallel or in series, said decoding procedure being iterative and comprising, for each iteration, a plurality of elementary decoding steps associated with interleaving and deinterleaving steps, corresponding to said plurality of elementary coding steps associated with said at least one interleaving step, each of said elementary decoding steps (50) receiving a set of information to be decoded and generating a set of weighted output information items associated with a set of decoded information, the said method being characterised in that it comprises a step of determining a characteristic quantity (51) adapted to calculate, for each of said elementary decoding steps (50), a quantity characteristic of the said set of weighted output information items, a comparison step (53) adapted to compare the said characteristic quantity with a threshold quantity, and an interrupt step (54) for interrupting said decoding procedure when said characteristic quality reaches the said threshold quantity.

2) Digital transmission method of the error correcting coding type according to Claim 1, characterised in that, each of said elementary decoding steps (50) generating a set of extrinsic information items corresponding to the said set of weighted output information items, the said characteristic quantity determination step (51) is adapted to calculate, for each of the said elementary decoding steps (50), a quantity characteristic of the said set of extrinsic information items.

3) Digital transmission method of the error correcting coding type according to Claims 1 or 2, characterised in that the said characteristic quantity calculated by the said characteristic quantity determination step (51) is a statistical quantity characterising the said set of weighted output information items.

4) Digital transmission method of the error correcting coding type according to Claim 3, characterised in that the said characteristic quantity calculated by the said

characteristic quantity determination step (51) is the mean of the absolute value of the weighted output information item calculated on the said set of weighted output information items.

5) Digital transmission method of the error correcting coding type according to Claim 3 or 4, characterised in that the said interrupt step (54) interrupts the said decoding procedure when the said characteristic quantity is greater than the said adapted threshold quantity.

6) Digital transmission method of the error correcting coding type according to any one of the preceding claims, characterised in that the said digital transmission method also comprises a threshold quantity determination step (52) for determining a threshold quantity as a function of at least one configuration parameter.

7) Digital transmission method of the error correcting coding type according to Claim 6, characterised in that configuration parameters are the signal to noise ratio, the size of the useful information block, the elementary decoding algorithm, the type of quantity used, the maximum number of iterations and the type of transmission channel.

8) Digital transmission method of the error correcting coding type according to Claim 6 or 7, characterised in that the said threshold quantity determination step (52) uses an adaptive algorithm making it possible to calculate the said threshold quantity as a function of one or more configuration parameters.

9) Digital transmission method of the error correcting coding type according to Claim 6 or 7, characterised in that the said threshold quantity determination step (52) uses a pre-established reference table making it possible to select the said threshold quantity as a function of one or more configuration parameters.

10) Digital transmission method of the error correcting coding type according to any one of Claims 6 to 9, characterised in that the said threshold quantity determination step (52) determines a threshold quantity so as to make a compromise between the performance permitted by the said decoding procedure and the complexity of this decoding procedure.

11) Digital transmission method of the error correcting coding type according to any one of Claims 6 to 9, characterised in that the said threshold quantity determination step (52) determines a threshold quantity as a function of a required mean transmission time.

12) Digital transmission method of the error correcting coding type according to any one of Claims 6 to 9, characterised in that the said threshold quantity determination step (52) determines a threshold quantity as a function of an acceptable mean energy consumption.

5 13) Digital transmission method of the error correcting coding type according to any one of Claims 6 to 12, characterised in that, a tolerable maximum number of iterations having been predefined, the said threshold quantity determination step (52) determines a threshold quantity by combining on the one hand a first quantity (63) characteristic of a first set of weighted output information items generated by a last 10 elementary decoder during a last iteration and associated with a first set of decoded information items corresponding to the error-free decoding of a set of information items to be decoded, and on the other hand a second quantity (62) characteristic of a second set of weighted output information items generated by the said last decoder during the said last iteration and associated with a second set of decoded information 15 items corresponding to the decoding of the said set of information items to be decoded in the case where errors remain.

14) Digital transmission method of the error correcting coding type according to Claim 13, characterised in that the said first and second quantities (63, 62) are statistical quantities characteristic respectively of the said first set of weighted output 20 information items and of the said second set of weighted output information items.

15) Digital transmission method of the error correcting coding type according to Claim 13, characterised in that the said first and second quantities (63, 62) are the means of the absolute value of the weighted output information item calculated on, respectively, the said first set of weighted output information items and the second set 25 of weighted output information items.

- 16) Digital transmission method of the error correcting coding type according to any one of Claims 13 to 15, characterised in that the said first and second quantities (63, 62) are determined, as a function of at least one configuration parameter, by means of an adaptive algorithm.

30 17) Digital transmission method of the error correcting coding type according to any one of Claims 13 to 15, characterised in that the said first and second quantities (63, 62) are determined, as a function of at least one configuration parameter, by means of an adaptive algorithm.

18) Digital transmission method of the error correcting coding type according to any one of Claims 13 to 15, characterised in that the said first and second quantities (63, 62) are determined, as a function of at least one configuration parameter, by means of a pre-established reference table.

19) Digital transmission method of the error correcting coding type according to any one of Claims 13 to 17, characterised in that the said threshold quantity is the sum of the said first quantity (63) multiplied by a coefficient α and of the said second quantity (62) multiplied by a coefficient $(1-\alpha)$, the coefficient α being chosen between 0 and 1.

20) Digital transmission method of the error correcting coding type according to Claim 19, characterised in that the said coefficient α is chosen so as to effect a compromise between the performance permitted by the said decoding procedure and the complexity of this decoding procedure.

21) Digital transmission method of the error correcting coding type according to Claim 19, characterised in that the said coefficient α is chosen as a function of a required mean transmission time.

22) Digital transmission method of the error correcting coding type according to Claim 19, characterised in that the said coefficient α is chosen as a function of an acceptable mean energy consumption.

23) Digital transmission method of the error correcting coding type according to any one of Claims 19 to 22, characterised in that the said coefficient α is determined by means of an adaptive algorithm.

24) Digital transmission method of the error correcting coding type according to any one of Claims 19 to 22, characterised in that the said coefficient α is determined by means of a pre-established reference table.

- 25) Digital transmission method of the error correcting coding type according to any one of the preceding claims, characterised in that the said elementary decoding steps (50) have inputs and outputs which are weighted, in terms of probabilities, likelihood ratios or log likelihood ratios.

26) Digital transmission method of the error correcting coding type according to any one of the preceding claims, characterised in that the said coding procedure comprises at least one puncturing step and the said decoding procedure comprises at least one corresponding depuncturing step.